

APPENDIX 8

CONDITIONAL WAIVER OF THE GENERAL WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM IRRIGATED LANDS

EXAMPLE OF QUALITY ASSURANCE PROJECT PLAN

1.0 INTRODUCTION

A Quality Assurance Project Plan (QAPP) shall be developed by the Discharger and shall include site-specific information and field and laboratory quality assurance requirements. This document identifies the major elements of the quality assurance and quality control components that need to be described in the QAPP. The QAPP shall be submitted to the Regional Board for review and approval.

2.0 OBJECTIVE

The objective of this document is to identify the quality assurance components that should be included in the QAPP for the watershed monitoring. A QAPP contains the requirements and criteria for the field and laboratory procedures used during planning and implementation of the monitoring program. These requirements and criteria shall be presented as a set of procedures to assure that the data collected during monitoring program represents, as closely as possible, *in situ* conditions of the watersheds. This objective will be achieved by using accepted methodology (e.g., U.S. EPA) to collect and analyze water, sediment, and biota samples. The program's ability to meet this objective will be assessed by evaluating the laboratory results in terms of detection limits, precision, accuracy, comparability, representativeness, and completeness. This document provides a description of major elements of the field and laboratory quality assurance components.

3.0 WHAT SHOULD BE INCLUDED IN THE QAPP

A monitoring QAPP should include Project Management information e.g., project organization and responsibilities, project schedule, and the quality assurance components of the field and laboratory activities. The elements described in this document will provide the framework for developing a QAPP. These elements describe the field and laboratory elements of a QAPP and the requirements that are set forth by the Regional Board. QAPP for the watershed monitoring must include all the required components as listed in Table No. 1.

Table No. 1. Components of Monitoring Quality Assurance Project Plan

SECTION NUMBER	SECTION NAME	SECTION DESCRIPTION
1.0	PROJECT MANAGEMENT	This section explains the overall project management.
1.1	TITLE PAGE AND APPROVAL	Description of Project Title, organizations, and responsible staff.
1.2	TABLE OF CONTENTS	Table of Contents list the sections and sub-sections included in the QAPP.
1.3	CONTRACT INFORMATION	List the contact staff, organization, and phone numbers.
1.4	PROJECT ORGANIZATION AND RESPONSIBILITY	Identify the project organization and the responsible entities who will ensure the QAPP procedures will be followed.
1.5	PROJECT OBJECTIVES AND APPROACH	Describe the objective based on the goal defined in the Conditional Waiver. Describe the approaches to meet the objectives.
1.5.1	<i>Measurement</i>	Describe the constituents that will be monitored.
1.5.2	<i>Project Schedule</i>	Identify when field studies will take place, the frequency of sampling, and when the field studies end.
1.6	QUALITY OBJECTIVES AND CRITERIA FOR DATA MEASUREMENT	Describe the quality objectives and criteria for data measurement. Refer to Quality Control Requirements listed in this document.
1.7	TRAINING AND CERTIFICATION	Describe the procedures for training field and laboratory staff.
1.8	DOCUMENTATION AND RECORDS	Describe the documentation procedure and record keeping for the monitoring program.
1.8.1	<i>Data to be included in Reports</i>	List the laboratory and field data that will be included in the report.
1.8.2	<i>Reporting Format</i>	Explain what type of data will be included in the final report. Describe how the data that didn't meet the quality objectives will be qualified (e.g., estimated, usable, unusable).
2.0	DATA ACQUISITION	This section describes the sampling design and sample collection criteria
2.1	SAMPLING DESIGN	Describe the sampling design.
2.2	RATIONALE FOR THE DESIGN	Describe the purpose of the study. State if the design is based on a statistical or judgmental data collection method.
2.2.1	<i>Procedure for locating and Selecting Environmental Samples</i>	Describe procedures for locating and selecting the monitoring site/location(s).
2.2.2	<i>Classification of Measurements as Critical</i>	All measurements shall be classified as critical. Describe the process that will ensure that data will undergo closer scrutiny during data review.
2.2.3	<i>Validation of any Nonstandard methods</i>	List the non-standard methods that will be used and describe the procedures to validate the method.
3.0	FIELD PROCEDURES	Describe the field procedures for the elements listed below. Refer to the Field Procedures (Section 3.0) to meet the requirements for this monitoring program.
3.1	SAMPLE COLLECTION METHODS	See Section 3.0 for criteria. Describe the project specific methods.
3.1.1	<i>Sample Storage, Preservative and Holding Times</i>	See Section 3.0 for criteria. Describe the project specific procedures.
3.1.2	<i>Sample Identification Scheme</i>	See Section 3.0 for criteria. Describe the project specific procedures.
3.1.3	<i>Field Measurements</i>	See Section 3.0 for criteria. Describe the project specific methods of field measurement.
3.1.4	<i>QC Sample Collection</i>	See Section 3.0 for criteria. Describe the project specific quality control samples.
3.1.5	<i>Field Instrument Calibration</i>	See Section 3.0 for criteria. Describe the project specific methods of calibration.
3.1.6	<i>Decontamination Procedures</i>	See Section 3.0 for criteria. Describe the project specific documentation procedure.
3.1.7	<i>Field Documentation</i>	See Section 3.0 for criteria. Describe the project specific field documentation procedure.
3.2	SAMPLE CUSTODY AND DOCUMENTATION	This section describes the sample custody and documentation procedures.
3.2.1	<i>Documentation Procedures</i>	Describe the field documentation procedures.
3.2.2	<i>Chain-of-Custody Procedures and Form</i>	See Section 3.0 for criteria. Describe the Chain of Custody procedures.
3.2.3	<i>Sample Shipments and Handling</i>	See Section 3.0 for criteria. Describe the sample shipment procedure. How the samples will be delivered from the field to the laboratory.
3.2.4	<i>Laboratory Custody Procedures</i>	See Section 3.0 for criteria. Describe the project laboratory custody procedures.
4.0	ANALYTICAL METHOD REQUIREMENTS	This section describes the analytical method requirements.
4.1	CHEMISTRY ANALYSIS	Describe the chemistry analyses procedure, reference the published method, and identify the quantification procedures.
4.2	TOXICITY TESTING	Describe the toxicity testing method and procedure, species, and reference the published methods being followed.
4.3	DETECTION AND QUANTITATION LIMITS	Describe the detection and quantitation limits for all constituents. See

SECTION NUMBER	SECTION NAME	SECTION DESCRIPTION
		Section 4.0 for requirements.
4.4	LABORATORY STANDARD AND REAGENTS	Describe the reagents used in the laboratory and how they are checked for the quality.
4.5	SAMPLE PREPARATION PROCEDURES	Describe the sample preparation procedure and the reference method for each analytical method used and every constituent being monitored
5.0	QUALITY CONTROL REQUIREMENTS	This section describes the laboratory and field quality control. Laboratory and field sampling SOP should be provided to include the detail information.
5.1	DATA QUALITY OBJECTIVES AND QUALITY ASSURANCE OBJECTIVES	Describe the precision, accuracy, comparability, and completeness criteria for this project. See Section 5.0 for required information.
5.2	DEVELOPMENT OF PRECISION AND ACCURACY	Provide information on how the precision and accuracy will be developed for this project. See Section 5.0 for required information.
5.3	INTERNAL QUALITY CONTROL SAMPLES	Describe and list the internal QC samples, the frequency and acceptance criteria.
5.4	FIELD QUALITY CONTROL SAMPLES	Describe and list the type of field QC samples, the frequency of collection, and the acceptance criteria.
5.5	LABORATORY QUALITY CONTROL SAMPLES	Describe the laboratory QC samples and the frequency of analyses.
6.0	INSTRUMENT AND EQUIPMENT PREVENTATIVE MAINTENANCE	This section describes the instrumentation and preventive maintenance.
6.1	SAMPLE EQUIPMENT CLEANING PROCEDURES	Describe the sampling equipment cleaning procedures.
6.2	ANALYTICAL INSTRUMENT AND EQUIPMENT TESTING PROCEDURES AND CORRECTIVE ACTIONS	List the analytical instrument, manufacturer, maintenance procedure, and corrective actions when instruments are not operating within the required operating limits.
6.3	INSTRUMENT CALIBRATION AND FREQUENCY	This section describes the instrument calibration procedures and frequency of calibration
6.3.1	<i>Analytical Procedures and Calibration</i>	Describe the calibration procedure and frequency for each analytical method used in this monitoring program. Refer to Section 6.0 to follow the required procedure.
7.0	DATA MANAGEMENT	Describe the management procedure. Where the original data will be kept, who will receive the copy of the data, and who is responsible for maintaining the database.
7.1	DATA ASSESSMENT PROCEDURES	How the data will be assessed and what tools will be used to assess the data.
7.1.1	<i>Training and Certification</i>	Describe the training requirements for the field and laboratory staff.
7.1.2	<i>Data to be included in the Report</i>	Specify the data that will be included in the monitoring report. See Section 7.0 for requirements
8.0	DATA VALIDATION AND USABILITY	This section describes the data validation and usability.
8.1	LABORATORY DATA REVIEW, VERIFICATION AND REPORTING	Describe the laboratory procedure for data review and validation prior to release of the data.
8.2	DATA SYSTEM AUDITS	Describe any audit that the system may undergo during monitoring.
8.2.1	<i>Technical System Audit</i>	Describe the frequency and procedure for the technical system audit.
8.2.2	<i>Performance Evaluations Audit</i>	Describe the procedure for performing a PE sample.
8.2.3	<i>Field Technical Audits</i>	Identify the entity who will be conducting the field technical audit and describe the procedure for conducting the audit.
9.0	REFERENCES	List all the references used to prepare the QAPP.
	ATTACHMENTS	List and enclose the attachments required. (e.g., Laboratory Quality Assurance Manual and SOPs).

In order to provide some technical information in preparing the QAPP, Section 3.0 through 8.2.3 of the QAPP listed in Table No. 1 are discussed in more detail below.

These sections focus primarily on the quality assurance and quality control components of the field and laboratory procedures. The section numbers provided below correspond to the Table No. 1 section numbers and section titles for ease of use.

SECTION 3.0 FIELD PROCEDURES

Surface water and sediment samples will be collected for chemical analyses and biological toxicity testing. While the primary focus will be the collection of samples for pesticides analyses, other constituents will be required as listed in the Monitoring and Reporting Program.

Section 3.1 Sample Collection Methods

Proper sampling techniques must be used to ensure that a sample is representative of the flow in the cross section. Samples should be collected using a standard multi-vertical depth integrating method to obtain the most representative isokinetic sample possible. By using this method the water entering the sampler is hydrodynamically equivalent to the portion of the system of the stream being sampled. Abbreviated sampling methods (i.e., weighted-bottle or dip sample) can also be used for collecting a representative sample of the stream chemistry.

Section 3.1.1 Sample Storage, Preservation and Holding Times

Sample containers must be pre-cleaned and certified to be free of contamination according to the United States Environmental Protection Agency (U.S. EPA) specification for the appropriate methods.

Section 3.1.2 Sample Identification Scheme

All samples must be identified with a unique number to ensure that results are properly reported and interpreted. Samples must be identified such that the site, sampling location, matrix, sampling equipment and sample type (i.e., normal field or QC sample) can be distinguished by a data reviewer or user.

Section 3.1.3 Field Measurements

For all water bodies sampled, water quality parameters including pH, specific conductance, dissolved oxygen, and temperature must be measured prior to collecting samples for laboratory analyses.

Section 3.1.4 QC Sample Collection

Equipment blanks, field duplicates, and matrix spikes must be collected at a frequency of about 1 per 20 normal samples. Matrix spikes will be collected as, normal samples and will be spiked at the laboratory prior to sample preparation.

Section 3.1.5 Field Instrument Calibration

Routine field instrument calibration must be performed at least once per day prior to instrument use to ensure instruments are operating properly and producing accurate and reliable data. Calibration should be performed at a frequency recommended by the manufacturer.

Section 3.1.6 Decontamination Procedures

All field and sampling equipment that will contact samples must be decontaminated after each use in a designated area.

Section 3.1.7 Field Documentation

All field activities must be adequately and consistently documented to ensure defensibility of any data used for decision-making and to support data interpretation. Pertinent field information, including (as applicable), the width, depth, flow rate of the stream, the surface water condition, crop and cultivation practices and evidence of pesticide/fertilizer or sediment management, and location of the tributaries must be recorded on the field sheets.

Section 3.2 Sample Custody and Documentation

Sample Custody must be traceable from the time of sample collection until results are reported. Sample custody procedures provide a mechanism for documenting information related to sample collection and handling.

Section 3.2.1 Documentation Procedures

A field activity coordinator must be responsible for ensuring that the field sampling team adheres to proper custody and documentation procedures. A master sample logbook or field datasheets shall be maintained for all samples collected during each sampling event.

Section 3.2.2 Chain-of-Custody Form

A chain-of-custody (COC) form must be completed after sample collection and prior to sample shipment or release. The COC form, sample labels, and field documentation must be cross checked to verify sample identification, type of analyses, number of containers, sample volume, preservatives and type of containers.

Section 3.2.3 Sample Shipments and Handling

All sample shipments are accompanied with the COC form, which identifies the contents. The original COC form accompanies the shipment and a copy is retained in the project file.

All shipping containers must be secured with COC seals for transportation to the laboratory. The samples must be placed with ice to maintain the temperature between 2-4 degrees C. The ice packed with samples must be sealed in zip lock bags and contact each sample and be approximately 2 inches deep at the top and bottom of the cooler. Samples must be shipped to the contract laboratories according to Department of Transportation standard.

Section 3.2.4 Laboratory Custody Procedures

The following sample control activities must be conducted at the laboratory:

- Initial sample login and verification of samples received with the COC form;
- Document any discrepancies noted during login on the COC;
- Initiate internal laboratory custody procedure;
- Verify sample preservation (e.g., temperature);
- Notify the project coordinator if any problems or discrepancies are identified; and
- Proper samples storage, including daily refrigerator temperature monitoring and sample security.

SECTION 4.0 ANALYTICAL REQUIREMENTS

Section 4.1 Chemistry Analyses

Pesticide analyses must be conducted on unfiltered (whole) fractions of the samples. Prior to the analyses of any environmental samples, the laboratory must have demonstrated the ability to meet the minimum performance requirements for each analytical method. Initial demonstration of laboratory capabilities includes the ability to meet the project specified quantitation limits (QL), the ability to generate acceptable precision and recoveries, and other analytical and quality control parameters as stated in this Guide. Analytical Methods used for chemistry analyses must follow a published method and document the procedure for sample analyses in a laboratory standard operation procedure (SOP) for review and approval.

Section 4.2 Toxicity Testing

The ambient water toxicity test results must provide a reliable qualitative prediction of impacts in stream biota. At a minimum the toxicity testing will need to include the 4-day static renewal procedures described in Method for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (US EPA, 2002).

Section 4.3 Detection and Quantitation Limits

Method Detection Limit Studies

Each laboratory performing analyses under this program must routinely conduct method detection limit (MDL) studies to document that the MDLs are less than the project-specified QLs. If any analytes have MDLs that do not meet the project QLs, the following steps must be taken:

1. Perform a new MDL study using concentrations sufficient to prove analyte quantitation at concentrations less than the project-specified QLs per the procedure for the Determination of the Method Detection Limit presented in Revision 1.1, “40 Code of Federal Regulations (CFR) 136, 1984.

2. No samples may be analyzed until the issue has been resolved. MDL study results must be available for review during audits, data review, or as requested. Current MDL study results must be reported at the beginning of every project for review and inclusion in project files.

An MDL is developed from seven aliquots of a standard containing all analytes of interest spiked at five times the expected MDL, which are taken through the analytical method sample processing steps. The data are evaluated and used to calculate the MDL. If the calculated MDL is less than three times below the spiked concentration, another MDL study must be performed using a lower concentration

Project Quantitation Limits

Laboratories generally establish QLs that are reported with the analytical results; these may be called reporting limits, detection limits, reporting detection limits, or other terms. These laboratory limits must be less than or equal to the project QLs. Project QLs must be lower than the proposed or existing numeric water quality objectives by the Regional Board. The laboratories must have documentation to support quantitation at the required levels.

Laboratories must report analytical results between the MDL and QL. These results must be reported as numerical values and qualified as estimates. Reporting as “trace” or “<QL” is not acceptable. Sample results less than MDLs will be reported only for GC/MS analyses if the mass spectral fingerprint can prove positive identification; these results must be qualified as estimated values by the laboratory.

Section 4.4 Laboratory Standards and Reagents

All stock standards and reagents used for extraction and standard solutions must be tracked through the laboratory. The preparation and use of all working standards must be recorded in bound laboratory notebooks that document standard tractability to U.S. EPA, A2LA or National Institute for Standards and Technology (NIST) criteria. Record must have sufficient detail to allow determination of the identity, concentration, and viability of the standards including any dilutions performed to obtain the working standard. Date of preparation, analyte or mixture, concentration, name of preparer, lot or cylinder number, and expiration date, if applicable, must be recorded on each working standard.

Section 4.5 Sample Preparation Methods

Surface water and sediments samples will be prepared in solvent or via other extraction techniques prior to sample analyses. All procedures must follow a published method. The sample preparation procedure must be documented and included in the monitoring plan for review and approval.

SECTION 5.0 QUALITY CONTROL REQUIREMENTS

The types of quality control assessments required in the monitoring program are discussed below. Detailed procedures for preparation and analysis of quality control samples must be provided in the

analytical method documents or Standard Operating Procedures (SOP) by the analytical laboratories for approval.

Section 5.1 Quality Assurance Objectives (QAOs)

Quality assurance objectives are the detailed QC specifications for precision, accuracy, representativeness, comparability, and completeness (PARC). The QAOs are then used as comparison criteria during data quality review by the group that is responsible for collecting data to determine if the minimum requirements have been met and the data may be used as planned.

Section 5.2 Development of Precision and Accuracy Objectives

Laboratory control spikes (LCSs) are used to determine the precision and accuracy objectives. The laboratory fortifies the LCSs with target compounds to monitor the laboratory precision and accuracy. Field duplicates measure sampling precision and variability for comparison of project data. Acceptable relative percent difference (RPD) is less than 25 for field duplicate analyses. If field duplicate sample results vary beyond these objectives, the results are qualified.

Section 5.3 Internal Quality Control (QC)

Internal quality control (QC) is achieved by collecting and/or analyzing a series of duplicate, blank, spike, and spike duplicate samples to ensure that analytical results are within the specified QC objectives. The QC sample results are used to quantify precision and accuracy and identify any problem or limitation in the associated sample results. The internal QC components of a sampling and analyses program will ensure that the data of known quality are produced and documented. The internal QC samples, frequency, acceptance criteria, and corrective action must meet the minimum requirements presented in the following sections.

Section 5.4 Field Quality Control

Field QC samples are used to assess the influence of sampling procedures and equipment used in sampling. They are also used to characterize matrix heterogeneity.

For basic water quality analyses, quality control samples to be prepared in the field will consist of equipment blanks, field duplicates, and matrix spikes (when applicable). The number of field duplicates and field blanks are set to achieve an overall rate of at least 5% of all analyses for a particular parameter. The external QA samples are rotated among sites and events to achieve the overall rate of 5% field duplicate samples and 5% equipment blanks (as appropriate for specific analyses).

Equipment Blanks

Equipment blanks will be collected and analyzed for all analytes of interest along with the associated environmental samples. Equipment blanks will consist of laboratory-prepared blank water (certified contaminate free) processed through the sampling equipment using the same procedures used for environmental samples.

Field Duplicates

Field duplicates will be collected at the rate of one per sampling event, and analyzed along with the associated environmental samples. Field duplicates will be collected at the same time as environmental samples or of two grab samples collected in rapid succession. If the relative percent difference (RPD) of field duplicate results is greater than 25% and the absolute difference is greater than the RL, both samples should be reanalyzed.

Matrix Spikes and Matrix Spike Duplicates

Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Matrix spike samples are collected at the same time as the environmental samples and are spiked at the laboratory. Laboratory acceptance criteria should be submitted to the Regional Board staff for review and approval as part of the development and approval of the Scope of Work for monitoring.

Section 5.5 Laboratory Quality Control

For basic water quality analyses, quality control samples prepared in the contract laboratory will typically consist of method blanks, laboratory control samples, laboratory duplicates, and surrogate added to each sample (organic analysis).

Method Blanks

Method blanks will be prepared and analyzed by the contract laboratory with each batch of samples. If any analyte is detected in the blank, the blank and the associated samples must be re-extracted and re-analyzed.

Laboratory Control Samples and Surrogate

Laboratory control samples (LCS) will be analyzed at the rate of one per sample batch. Surrogate may be added to samples for organic analyses. Laboratory acceptance criteria must be submitted to Regional Board staff for review and approval as part of the development and approval of the monitoring plan.

SECTION 6.0 INSTRUMENTATION AND EQUIPMENT PREVENTIVE MAINTENANCE

Section 6.1 Sample Equipment Cleaning Procedures

Equipment used for sample collection must be cleaned according to the specific procedures documented in each sampling SOP. Sampling SOP will be prepared by the group responsible for sampling and will be submitted to Regional Board for review and approval as part of the monitoring plan.

Section 6.2 Analytical Instrument and Equipment Testing Procedures and Corrective Actions

Testing, inspection, maintenance of analytical equipment use by the contract laboratory, and corrective actions shall be documented in the quality assurance manuals for each analyzing laboratory. Laboratory Quality Assurance Manual must be submitted to Regional Board for review and approval prior to start of sampling and analyses.

Section 6.3 Instrument Calibrations and Frequency

Section 6.3.1 Analytical Procedures and Calibration

This section briefly describes analytical methods and calibration procedures for samples that will be collected under this monitoring program.

Analytical methods that will be used in this program will need to follow the general guidance of any of the following methods:

- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA-600/4-85 054)
- *U.S. EPA Methods for Chemical Analysis of Water and Wastes* (EPA-600/4-79-020, third edition, 1983)
- *Methods for Determination of Organic Compounds in Drinking Water* (EPA-600/4-88/039)
- *Standard Methods for the Examination of Water and Wastewater*
- *USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C. EPA-821-R-02-012*
- *USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C. EPA-821-R-02-013.*
- *USEPA. 1994. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. Office of Research and Development, Washington, D.C. EPA-600-R-94-024.*

For this program, only linear calibration with either an average response factor or a linear regression is acceptable for organic analyses. Non-linear calibration is not allowed since using this calibration option creates a potential for poor quantitation or biased concentration of compounds at low or high concentrations (near the high and low ends of the calibration range).

Laboratories shall prepare an initial 5-point calibration curve, where the low level standard concentrations is less than or equal to the analyte quantitation limits

SECTION 7.0 DATA MANAGEMENT

Copies of field logs, a copy of COC forms, original preliminary and final lab reports, and electronic media reports must be kept for review by the Regional Board Staff. The field crew must retain original field logs. The contract laboratory shall retain COC forms. The contract laboratory will retain copies of the preliminary and final data reports.

Concentrations of chemicals and toxicity endpoints, and all numerical biological parameters shall be calculated as described in the referenced method document for each analyte or parameter, or a laboratory operating procedures. The data generated shall be converted to a standard database format maintained by the responsible party and available for the Regional Board staff review. After data entry or data transfer procedures are completed for each sample event, data should be inspected for data transcription errors, and corrected as appropriate. After the final QA checks for errors are completed, the data should be added to the final database.

Section 7.1 Data Assessment Procedures

Data must be consistently assessed and documented to determine whether project quality assurance objectives (QAOs) have been met, quantitatively assess data quality and identify potential limitations on data use. Assessment and compliance with quality control procedures will be undertaken during data collection phase of the project.

Section 7.1.1 Training and Certification

All staff performing field or laboratory procedures shall receive training to ensure that the work is conducted correctly and safely. At a minimum, all staff shall be familiar with the field guidelines and procedures and the laboratory SOP included in the project QAPP. All work shall be performed under the supervision of experienced staff, field managers, laboratory managers or other qualified individuals.

A copy of the staffs' training records must be maintained in each specific project file.

Section 7.1.2 Data to be Included in Data Reports

For each sampling event, the field team or monitoring agency shall provide the Project Lead Staff with copies of the field data sheets (relevant pages of field logs) and copies of the COC forms for all samples submitted for analysis. At minimum, the following sample-specific information must be provided for each sampling program to the Regional Board staff:

- Sample Identification
- Monitoring location/ field descriptions
- Sample type, e.g. grab or composite type (Cross-sectional, flow-proportional, etc.)

- QC sample type and frequency
- Data and time(s) of sample collection
- Requested analyses (specific parameters or method references)
- Results of samples collected and all laboratory QC samples (calibrations, blanks, surrogates, laboratory spikes, matrix spikes, reference materials, etc.) and the identification of each analytical sample batch.

Section 7.1.3 Reporting Format

All results meeting data quality objectives and results having satisfactory explanations for deviations from objectives shall be reported on the Laboratory Final Report. The final results shall include the results of all field and laboratory quality control samples.

SECTION 8.0 DATA VALIDATION AND USABILITY

Section 8.1 Laboratory Data Review, Verification, and Reporting

The laboratory quality assurance manual must be used to accept, reject or qualify the data generated by the laboratory. The laboratory management will be responsible for validating the data generated by the laboratory.

The laboratory personnel must verify that the measurement process was “in control” (i.e., all specified data quality objectives were met or acceptable deviations explained) for each batch of samples before proceeding with analysis of a subsequent batch. In addition, each laboratory will establish a system for detecting and reducing transcription and/or calculation errors prior to reporting data.

Only data, which have met data quality objectives, or data, which have acceptable deviations explained shall be submitted by the laboratory. When QA requirements have not been met, the samples will be reanalyzed when possible and only the results of the reanalysis will be submitted, provided they are acceptable.

Section 8.2 Data System audits

The Regional Board staff may audit laboratories during conducting sample analyses for this program.

Section 8.2.1 Technical System Audit:

A technical system audit is a quantitative review of a sampling or analytical system. Qualified technical staff members perform audits. The laboratory system audit results are used to review operations and ensure that the technical and documentation procedures provide valid and defensible data.

Section 8.2.2 Performance Evaluation Audits

Performance evaluation audits quantitatively assess the data produced by a measurement system. Performing an evaluation audit involves submitting certified samples for each analytical method. The matrix standards are selected to reflect the concentration range expected for the sampling program. Any problem associated with PE samples must be evaluated to determine the influence on field samples analyzed during the same time period. The laboratory must provide a written response to any PE sample result deficiencies.

Section 8.2.3 Field Technical Audits

The contractor should routinely observe field operations to ensure consistency and compliance with sampling specifications presented in this document and Quality Assurance Project Plans that will be developed later. An audit checklist should document field observations and activities.

9.0 REFERENCES

U.S. EPA 2001. Laboratory Documentation Requirements for Data Evaluation (R9QA/004.1)

U.S. EPA 1983. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-020, third edition

U.S. EPA 1988. Methods for Determination of Organic Compounds in Drinking Water (EPA-600/4-88/039)

USEPA.2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C.
EPA-821-R-02-012

USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C.
EPA-821-R-02-01

USEPA. 1994. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. Office of Research and Development, Washington, D.C. EPA-600-R94-024.